MANUAL TRAINING IN THE GRADES

L. D. HARVEY

Manual training as a form of educational effort involves such a systematic training of the hand in construction work, through the use of tools and manipulation of material, as is adapted to the proper development of the motor activity of the hand, initiated, guided, and controlled by mental activities essential for the proper development of the mind.

It will be observed that by this statement the systematic training of the hand, in construction work, through the proper development of its motor activities, is made a definite end and aim of elementary training.

By the proper development of the motor activities of the hand I mean such a growth of power and control in the use of those activities through manual training as will enable the individual thus trained, and because of that training, more readily and more effectively to employ the hand in productive labor in the field of industrial effort. That such a result can be secured through this training is my belief, based upon the results of reasoning, of extended observation, and of experience in the administration of this line of work in the elementary schools.

To put it plainly, I find justification for that sort of manual training which aims at a systematic training of the hand in the increased power which it gives the individual to earn a livelihood through the use of his hands.

I am aware that this statement will invite criticism from some quarters; that it will be claimed that it is putting educational effort and aims on too low a basis. I would anticipate such criticism by saying that manual training is not all of education; that I do not claim for it everything that is needed for the proper development of those who attend our public schools; but I do claim that, if properly administered, it will increase the effectiveness of those trained as productive factors in society, and thus

increase their capacity to earn a living and to support those dependent upon them.

Our public-school system is supported by public taxation. The right of the state to levy taxes for the support of a public-school system is found in the fact that the state has the right to do whatever is essential for its perpetuity; and good citizenship is essential for the perpetuity of the state.

The duty which the public school owes to the state is to train American citizens. The fundamental basis of all good citizenship is a trained intelligence which will enable the individual to earn a living, to become a self-supporting member of society. The public school which ignores this fact, through the quality of the training given, has no right to an existence.

That the individual trained in the public schools subsequently shows his capacity to support himself may be because of the training there obtained, or in spite of it. It should be because of that training. The public school should be an active factor in the development of this capacity to earn a livelihood. With this given, all things else may be added; but without it, nothing is possible.

Some years ago the secretary of the International Committee of the Y. M. C. A., after careful study of statistics relating to the subject of educational preparation of the young men of the United States between the ages of sixteen and thirty-five, reported as follows: "Of 13,000,000 young men in the United States between these ages, only five in every one hundred have been specially prepared for their occupations by education received at some kind of a school." He also found that of every one hundred graduates of our grammar schools, only eight obtain their livelihood by means of the professions and commercial business, while the remaining ninety-two support themselves and their families by means of their hands. If these statistics are correct—and an examination into the conditions existing in any community will seem to substantiate them—it must be evident that the education given in the grades below the high school which does not make provision for the training of the hand, as well as of the brain, is failing to do for these children what they

have a right to demand shall be done for them, and what society and the state have the highest interest in demanding shall be done for them.

President Roosevelt has expressed, as the keynote of his administration, the sentiment: "a square deal for every man and every interest." If ninety-two out of every one hundred of the graduates of our grammar schools, and practically all of those who leave the elementary schools before completing the eighth grade, are to earn their living by their hands, I submit that the system of education which fails to give them during the most impressionable and formative period of their lives such a training of the hand as will fit them the earlier to become skilled in the different departments of manual labor in which they may engage, and thus to make their work more productive, is not giving "a square deal" to these future members of society, to society itself, nor to the state.

Thus far I have spoken of the systematic training of the hand as a definite end of manual training. But it is not the sole end or purpose. We must take note of the fact that the essential essence of all training is *doing;* of manual training, is *doing with the hands;* and that in systematic manual training, from start to finish, the motor activities of the hand must be set in operation, must be guided and controlled by the action of the mind; and the opening statement of this address calls for mental activities essential for the proper development of the mind—not all forms of mental activity, but forms which cannot be omitted, because of their necessity for proper mental unfolding.

Mental power comes through organized thinking. The mere memorizing of what others have said, or learning about what others have done, is not organized thinking, and gives little or no mental training. Organized thinking comes whenever the individual sets himself a definite task to do; and then determines and applies the ways and means necessary for the accomplishment of that task. This task may be the solution of a problem in arithmetic, or it may be the construction of a model from wood, iron, or other material, or the creation of a new and original design for such a model. I believe the latter forms to be of the higher

value, because they demand the use of tools and material. The tools cannot be used successfully upon the material to produce the desired result, without the exercise of the closest attention and of those forms of mental activity leading up to an act of the judgment. There can be no training of the hand which does not involve mental activity, and the mental activity thus involved is of a kind which furnishes just the training needed for the practical concerns of life. It is a mental activity out of which grows skill in doing; and skill in doing as a result of intelligent thinking should be one of the chief purposes of education.

It is the ambition of every boy, at a very early age, to become the owner of a pocket-knife. The reason for this is that the pocket-knife is a tool which furnishes for him the largest opportunities for the exercise of his inherent desire to do. No one thinks of denying him the pocket-knife because of the fear that its use will result in his becoming a mere whittler; but, on the contrary, the thoughtful parent will furnish it because of its value as an instrument in the training of the child's manual and mental powers.

Because in the manual-training school the child learns to use a plane or a saw, it does not follow that he is to be a carpenter. Because the girl learns to sew, it does not follow that she must be a seamstress; or because she learns the value of foods and how to prepare them, that she must, therefore, be a cook. The use of the plane and the saw will be of value to the boy, should he decide to become a carpenter. The training in sewing and cooking will be of value to the girl, should she decide to become a seamstress or a cook, or should be compelled to take the place of either seamstress or cook, even temporarily. But, in any case, the training thus afforded will be of the highest value in the development of the individual, because first, it demands concentration of attention, and thus develops that quality so essential to success in any field of human endeavor; second, it requires organized thinking in the adaptation of means to ends, a demand which will be constant through life; and, third, it demands an exercise of the will-power, resulting in doing for the realization of those ends, and through the doing there comes a clarification of the thinking.

It is not claimed that this sort of training, and the knowledge and the skill which it brings, constitute all that is necessary in the education of the child; but the claim is made, and well made, that any system of education which leaves out this kind of training omits one of the essential requisites in the proper education of the child.

I believe that anyone who will analyze closely the mental processes involved in the mastery of a lesson in grammar, in history, in geography, or in any of the branches taught in the public school, and then compare them with the mental processes involved in making a working drawing of a model in wood, and then from that drawing, by the use of tools, reproducing that model, will see that for all purposes of mental training the latter is of no less value, to say the least, than the former. It has the added value in that it has developed control of the hand, and skill in its use, which will be of value in other fields of work where manual skill is required.

Systematic training of the hand involves a definite purpose and adaptation of material, tools, and processes for the proper accomplishment of that purpose. These determinations are, in every case, the result of mental activity. The selection of the material, the choice of tools, and even the specific purpose, at any given stage of the work, may be the result of mental activity and choice on the part of the teacher; but the setting in operation of the motor activities employed in the use of tools or in the manipulation of material, and the guidance and control of those motor activities to the accomplishment of the given end, are the result of mental activity on the part of the pupil. Hence it follows that the systematic training of the hand for the proper development of its motor activities involves an equally systematic training of the mind which initiates, guides, and controls those activities. The statement already given calls for systematic training of the hand for a proper development of its motor activities. The term "proper" is used advisedly. Under the limitations it imposes, the specific ends determined, and the exercises necessary for the accomplishment of those ends, must be selected with reference to the state of development of motor activity and power of the

child being trained. It eliminates all classes of exercises beyond the strength of the pupil, at any given time, and also other classes of exercises requiring close work and too fine adjustments of motor activity at an early stage of the pupil's development. Since the training of the hand required by this statement involves mental initiative and control, it follows, that, when such a stage of skill has been developed as to cause the actions to become reflex, or when the stage is closely approached, they fall outside the demands here made, because then we have motor activity, but without the corresponding and correlated mental activity. Exercises thus continued may make for skill in a given narrow line of effort, but not for general development. The term "proper," as used in the statement, requires the discontinuance of any special motor activity when it has reached a stage where mental control is no longer an essential.

The *proper* development of motor activities implies an order of development which must be taken into consideration, and which must determine and control the character of the exercises which involve the training. The requirement that the motor activities involved in the manual training shall be initiated, guided, and controlled by mental activites essential for the development of the mind, makes it necessary that these exercises shall be selected with reference to the demands which they make upon the mind. It follows, therefore, that the mental capabilities of the pupil, at any stage in the process of training, must be considered. Work must be given of sufficient variety in the demand which it makes, for calling into play the varied forms of mental activity and in their proper order.

If this statement of the function of manual training in the public schools is accepted, it would seem to follow that there should be a definite course of training organized in the light of definite knowledge as to the motor and mental capabilities of pupils at different stages in their development, and that it should be systematic in its unfolding. It must grow out of careful study and scientific knowledge of what is necessary for the proper motor development of the child. It must not be left in its development to the sport and play of the child's impulses or temporary interests.

The problem is to present such a line of training as the child needs, and to interest him in something worth while, rather than to find some new thing which may appeal to each new and fleeting interest. Training involves the shaping and directing of interests, and especially is this true in the training of the child whose interests are as varied as his impulses.

The exercise of the hand in manual occupations outside the school is not systematic; it is accidental, sporadic, fragmentary; and because the work is unrelated, unorganized, it is not of the highest value for hand-training, and the mental activity is not of a kind to give the best results.

The schools which do not give manual training give an incomplete training. The sources of stimuli which they furnish are words mainly. The words presented for the pupil's consideration are symbols. The interpretation of the symbols depends upon the character and extent of the apperception mass in the pupil's mind. It may be entirely adequate, or it may be partially or completely inadequate, in which case the mental product is imperfect, inadequate; the *impression* is faulty in that it is incorrect, vague, incomplete. The *expression* of the results of this consideration of words is again chiefly through the medium of words.

The teacher under the present system of school organization, and with existing ideals of what is demanded of the pupil, too often is unable to test whether the pupil's expression is a remembered form of words without meaning, or, when other words are used, whether they are correct symbols of the correct idea.

In manual training, the sources of mental stimuli are things chiefly, and words secondarily. The same thing is true in nature-study; but the former is of a higher form, because the mental stimulus leads directly to, and co-ordinates with motor activity, and results in an expression of thought in the completed products of the hand, guided and controlled by the mind. This expression of thought is in permanent objective form, and furnishes an opportunity for comparison and correction of inaccuracies, which the fleeting word does not.

Book-study deals with words, and the character of the mental

activity aroused is uncertain. Nature-study deals with objects of nature, their forms, structure, sources, and uses. Manual training deals with material things, their form, sources, and uses, and, in addition thereto, demands physical and mental activity in changing the raw material to the finished product; and this is exactly what the individual will have to do who earns his living with his hands.

We may say that education demands, on the intellectual side, the development, control, and training for effective use of the varied activities of the mind, through the action of stimuli of the right kind, properly applied at the right time.

The work of the teacher, then, in the development, control, and training of the intellectual powers of the child, is in selecting the stimulus proper in kind and time, and, through right methods of applying it, securing the kind and amount of mental activity, properly directed, required to meet the needs of the pupil at a given time for given ends.

It will be apparent that in the field now under consideration —the intellectual side of education—the nature of the mind determines what is essential in the educational process, and this without reference to environment. It will also be evident that the nature of the mind does not determine the choice of material available as to the source of stimuli for various forms of mental activity or control.

Sources of mental stimuli available in the work of the public schools are words and material things. In the actual affairs of life the great majority of human beings are engaged in productive activities of one form or another. These productive activities demand a knowledge of material things, and knowledge of and skill in the processes necessary for the transformation of the raw materials of nature into forms fitted to satisfy human wants.

To do the work with the greatest effectiveness, it is evident that there must be specific training for it. Such training is not afforded through the activities evoked by the mental stimulus of words alone.

The activities evoked by the stimulus of material things may be roughly separated into two classes:

1. Those which begin with observation, and, passing on through a consideration of their forms, sources, and uses, terminate in definite judgment, but which require no constructive effort involving processes resulting in change of form.

Nature-study affords an illustration of this type of mental activity. It has its place in a rational scheme of elementary education because it furnishes a necessary stimulus not supplied through the medium of words.

2. The second class of activities resulting from things as a source of mental stimulus is that shown in constructive effort through motor activities, controlled by the mind and directed to a change of form of the material things under consideration.

Since this is the class of activities which must employ the great mass of mankind, and since systematic training is essential for effectiveness in this line of effort, and since systematic training is not given outside the school during the school age, and because it can be most effectively given during that period of the child's life, it follows that provision should be made for giving it in the elementary schools.

Manual training under the implications of the introductory statement of this address furnishes this kind of training, and rounds out and completes the necessary forms of activity for the development of the child during the elementary-school age.

Let us consider briefly the part which constructive effort plays in the work of the world.

The magnificent cathedral, with its splendid proportions, adorned with paintings, mosaics, and statuary, embodies the highest creation of the mind of the architect and the artist. The splendid structure in its completed form existed in the mind of the architect as a mental product before it assumed material form. The breathing marbles and the speaking canvasses which adorn its walls existed in the mind of the sculptor and painter as products of the constructive imagination while the marble was yet in the unhewn block and the paints unmixed. Before these creations of mind could stand forth in embodied form to minister to the spiritual needs and aesthetic tastes of all, the materials of which its component parts are formed must be selected, assembled,

and wrought upon by the cunning hand of the builder, the sculptor, and the painter in concrete constructive effort.

We may perhaps rightfully claim that the highest form of mental activity here involved is shown in the conception of the architect and artist, which preceded its objective realization; but we must not forget the debt they owe to the cunning work of the hand. Art, whether in architecture, painting, or sculpture, is an evolution. The builder's interpretation and embodiment of the constructive imagination of the early architect into an objective reality gave to that architect and others in concrete form that which had else remained a figment of the imagination. It now stands in form for study, for a determination of its defects and its points of excellence, of its adaptation or lack of adaptation to the purposes it was designed to serve. As a result of this study of the adaptation of means to ends, the imagination constructs a better mental product, which the builder again fixes in permanent form through the work of the hands. This process is continued, the work of architect and builder, each necessary for the other, each gaining by the other's work, until new types and higher forms of structure both in utility and in beauty are realized.

In the same way we might trace the development of art in painting and sculpture. The idea of the artist must take form through the work of the hand, and each creation of mental and motor activity, whether in statuary or painting, becomes a lesson and an inspiration for further effort.

Design, whether for decorative purposes, or in the production of new forms and combinations of materials adapted to the uses of man, follows the same line of development.

The modern printing-press is one of the most marvelous products of human ingenuity, but in its highest type today it is an evolution from the first crude press employing movable type, through the combined work of mind and hand. Each new type in the evolutionary process has come through a new conception of the mind, the outcome of a study of the defects and excellencies of an earlier type, and put into concrete form by the trained hand of the workman.

The more thoroughly the workman has been trained to con-

ceive the end for which he works, and at each step to adapt wisely and skilfully his efforts to the accomplishment of that end, the more likely will he be to see the necessity for and possibility of improvement.

The more skilful the inventor is as a workman, the fewer the errors in his designs and in the complete product.

The course in manual training in the grades designed to meet the demands for training here set forth should have a content of its own, wrought out and determined by the capacities and needs of the individuals to be trained. The materials and tools to be used, the particular forms of constructive work and their order, and the processes employed in the construction, should be selected and determined with respect to their adaptation in furnishing the kind of training required.

Manual training should be given, not as the fag end of other subjects in the course, and not chiefly for the purpose of illustrating or enlarging the work in those other subjects. The question as to how far the exercises of manual training may be utilized to supplement other school work — geography, history, arithmetic, etc.— is of far less importance than the question as to how far these exercises are adapted to meet the demands for necessary mental and motor activity, essential for the development of the child and not otherwise provided.

It is not my intention to claim that the work in manual training should not be in any way related to the other work of the school. It furnishes opportunity for work of high value in connection with other subjects; and such opportunities of relating one line of work with another to the betterment of both should certainly be seized.

Enough crimes have already been committed in the educational world under the name of correlation, without still further extending the list in attempting to correlate every form of motor training with some phase of the textbook of the schoolroom.

Correlation in educational work should be natural and not forced. Indeed, it cannot be forced; and much of what goes under the name of correlation would better be called a conglomeration of disjointed and unrelated fragments of knowledge, with

a resulting habit of mind of little value in effective and concentrated effort.

A course of study in manual training extending throughout the grades, and planned as above set forth, would furnish many opportunities for extending knowledge of materials and processes in industrial organization and administration lying outside the main line of training which the work is designed to offer. The extent to which these fields of knowledge may be explored must be determined by their value as matters of knowledge, their relation to other subject-matter of the course of study, and to the character of mental activity involved in their mastery. The exercises may frequently develop an interest in past or present industrial processes, the knowledge of which may be of value to the child.

I believe the children being trained today are far more concerned with the industrial processes of today than they are with the industrial processes of primitive peoples, and I cannot bring myself to the belief that nature has made so great a mistake as to bring children into the world at any given stage of the development of civilization, lacking the capacity to enter into that civilization without going through all the preliminary processes and steps through which it has been evolved.

I am not undertaking to argue the question as to whether the child in his unfolding must live over again in his development the development of the race, and must begin where the race began; but I do undertake to express my belief that, if this be true, he is at the time he enters the public school advanced far enough in this process of development so that some systematic effort may be undertaken for his training through the utilization of his immediate environment, and that it is unnecessary to attempt the difficult task of reconstructing the environment of primitive peoples which finds no proper place in the environment of today.

It is true that the industrial development of today presents complexities too great for the child of the public school; and yet I believe there is in it sufficient that is simple and elementary, and which leads directly and naturally to the more complex, to fur-

nish ample scope and material for the activities of the pupil's mind and hand; and that the consideration of these simpler phases of present environment furnishes a better basis for the understanding and appreciation of environment as a whole than would a class of exercises growing out of a dealing with the supposed environment of a people remote in time and low in the scale of development.

I believe that in our effort to make the work in manual training serve as a point of departure in the accumulation of knowledge of that which is remote we have overlooked some opportunities which it affords, subsidiary to the main line of training, but which are of the highest value. I shall call attention to one instance of this kind which has been very generally ignored (so far as my observation goes) in the field of manual training. I refer to the opportunities it offers for exercises of the highest order in developing the use of language. In the completed products of the constructive exercises involved in manual training, and in the processes employed, we have materials which may be utilized for language-training in the two forms of description and exposition unexcelled by any other material employed in the public schools.

The child who is trained in accurately describing one of these completed products of his own hand, or who is trained in giving an accurate exposition of the steps in order, and processes employed in the construction of that object, has secured a power in the use of exact and definite language which he receives nowhere else in the public-school course; every such exercise in the use of language requires such a training of the observation, and a clarification and organization of his knowledge, as are demanded by almost no other exercise in any phase of the public-school work.

One of the greatest weaknesses of the pupils in the public schools today is in lack of power in definite, concise, accurate statement. Too often this lack of power is due to the fact that pupils are asked to talk when they have nothing to say, to write essays on subjects of which they know nothing except as they acquire the knowledge from the words of the book.

The constructive work demanded by the manual-training course requires close observation and adaptation of means to ends,

an examination of effort and its results with relation to its success in realizing the desired end, a determination of what is lacking, further effort guided and directed by the increased knowledge of what is demanded, and again further comparison and study, followed by further renewed efforts. All this requires clear thinking. The work of the pupil's own hands is then a subject about which he knows something definite, and definite knowledge is the essential for definite statement. Here we have the raw material out of which accurate language in certain important forms naturally follows.

For the workman in the shop and elsewhere, the ability to state accurately and concisely what he is to do, or what he has done, or what another is to do, is an ability which has commercial value; and it is also an ability which has other value than can be measured in terms of dollars for the individual. Clear thinking furnishes the right conditions for clear statement. Clear statement begets clear thinking.

Too often in manual training we have left out all that is artistic. Motor activity may be developed and trained, and with it all the mental activity necessarily involved in such training when dealing with things beautiful as well as with things ugly in form. Artistic design is constructive work of the highest order. It is called for in the requirements for manual training set forth in the very first sentence on this address. But manual training is not a mere annex to artistic work, nor is it to be employed solely as a medium through which to display the results of constructive artistic design. Each should supplement the other. They are closely related. They should go hand in hand. Design for the mere sake of design in art has no value. Its value lies in its use; and ample scope is afforded in the field of manual training for effective and valuable artistic training in design and its applications to things useful.

A question of vital importance in the introduction of manual training into the grades is: Where shall it be begun, and how long shall it be continued? If I have correctly described its function, the question is answered in that statement. It should be begun when the child enters the public school, and it should be continued during his stay there.

There are still other reasons than those I have named, why it should be begun in the lowest grades and continued throughout the course. We have been making the mistake in our public-school work of assuming that the child can be taken from the home, where its activities before entering school have been concerned chiefly with things, and that during the school period each day we may entirely change the form of his activities and invoke the activities which come from the use of books. We are asking for mental activity, whereas the demand of its physical nature is for physical activity. We are demanding physical quiet, when its whole nature rebels against it. We have been asking him to deal with the abstract, when he wants that for which he is fitted and which appeals to him. We give him pencil and paper, and occasionally paints and brush, and expect him to find in these materials ample scope for the demands of his physical being for motor activity.

He should have during these early years just such scope for motor activity and systematic training as a well-organized course in manual training will provide.

I have sometimes heard it said that the claim made for motor activity carries with it the implication that manual training will make too great demands upon the mental activities of the child, and furnish no relief from the supposed mental activity involved in the use of books; but we must remember that change and variety in the form of mental activity invoked by material in use in manual training, which serves as a stimulus for such activity, afford the relief needed; and we must not forget that it is an impossibility to secure effective mental activity on the part of pupils in the primary grades, while holding them exclusively to a study of books and recitation work during the six hours of the school day. Manual training, then, is needed, in the very lowest grades, to furnish a form of activity which the physical nature of the child demands, and to utilize that activity through systematic, organized work for the development of the child.

While perhaps this reason may not be urged with the same force in the higher grades, it cannot be ignored with propriety in any one of the elementary grades. Manual training should be

continued throughout the grades because a large number of pupils not only do not go beyond the completion of the work in the eighth grade, but drop out also before that time. All need the training, both motor and mental, which a systematic, well-organized course of constructive work gives when properly administered.

I shall not undertake now to discuss in detail, or even generally, the course of study in elementary manual training. This is not the place nor the time for such a consideration. But I do wish to say that, in my judgment, the large problem for those engaged in furthering the cause of manual training today is in the determination of the values of the different lines of work, material used, and processes employed in this field of educational effort; what motor activities are proper at a given stage in the child's development; what mental powers are valuable for the control of these activities; what materials, tools, and processes are best adapted to meet the needs of the child at the different stages of development.

Such an examination as this would result in material modification of the work done in almost any of our schools where manual training is in operation. We are as yet feeling our way. We shall make progress most rapidly when we throw aside sentimentalism, and consider the question of, not what showing we can make, but what can be done to meet the needs of pupils. We should stand ready to discard each and every pet form of work which cannot stand the test of such an examination.

The examination of the manual-training exhibits at the St. Louis Exposition showed some remarkable things. It showed work being done in the lowest grades in one system of schools, and exactly the same line of work in the highest grades in another system. It showed work too difficult for the grade in which it was undertaken in some schools, and not up to the capacity of pupils required to do the same work in the higher grades in other schools. It gave evidence in many cases that product was the thing in the mind of the school authorities rather than training. It showed that the relation of art to manual training was in most cases so remote as not to be discoverable.

All these conditions are what might naturally be expected. This entire field of work is comparatively new. But the time has come for deliberation, consideration, and examination, not only of the basis upon which it rests, of the ends which it is to serve, but also of definite plans of adapting means to ends. It is not the work of any one individual, nor of any short period of time. It must be undertaken faithfully, patiently, and systematically by all who are interested in this phase of educational work. Further, experiments must be tried; other failures will result; but out of failure will come new experience and better judgment.

I cannot close without considering briefly another phase of the subject, and that is: how to find a place for it in the course of study. We hear much of the overcrowded condition of the elementary course of study, and we hear perhaps as much more as to the meager results which come from the administration of this course of study. We are told that pupils from the public schools have no power in the use of language, are not able to use arithmetic for the practical purposes of life, know little of geography and less of history; and, in fact, that they are more noted for the things they have not learned than for those they have mastered. And many of those who make these complaints, doubtless with more or less of truth, argue that what is needed in the public schools is fewer rather than more subjects, and that manual training would only add to the burdens of teachers and pupils, and would detract from the quality and quantity of knowledge and kind of training to be derived from the study of the traditional subjects in the course of study.

The remarkable thing about these claims is that they are made just as frequently, and with just as much truth, where no work in manual training, or other of the so-called "fads," is found.

The trouble is, not that we have too many subjects, but that we attempt to teach too many things in these subjects which are not worth teaching, and are wasteful in time, method, and effort, with correspondingly poor results.

Those who argue against manual training forget that there is no other line of work in which the pupil can engage which calls forth mental activity of a higher order than manual training;

forget that this work can be introduced into the school and be used as a stimulus for mental activity, when books fail as such a stimulus, and when the time spent in the subjects studied is time not only wasted, but worse than wasted, because it results in the development of bad mental habits; they forget that this work gives physical activity, change of position, change of interest, change in the form of mental activity; and that the pupil goes from it to his other tasks refreshed instead of wearied, and that he is able in the remaining time to do more in the field of the common branches than he could have done had the effort been made to hold him to those lines of work continuously.

The mental power gained through this dealing with things, and in the direction and control of motor activities, is a mental power which manifests itself in greater capacity of the pupil for the mastery of his work and more rapid progress in that work. He sees in it practical utility. It holds him in school longer; and, if properly organized, it is pleasing to his parents from the standpoint of utility, if for no other reason. The influence upon the parents is to make them more cordial in the support of the public schools — and the development of such a sentiment in any community is one which should be encouraged, because the development of the public-school system depends finally upon the belief of the public in its efficiency.